UNIQUE STUDY POINT

By Sumeet Sahu

www.uniquestudyonline.com

Unique Study Point, Amitesh Nagar, Indore, MP | Contact: 8103405051

Class: VI	**Subject:** Mathematics	**Session:** 2025-26
Chapter: 07 - Fractions	**Time:** 1½ Hours	**Max. Marks:** 40

General Instructions:

1. All questions are compulsory.
2. This question paper contains 20 questions divided into five sections A, B, C, D and E.
3. Section A contains 10 MCQs of 1 mark each.
4. Section B contains 4 questions of 2 marks each.
5. Section C contains 3 questions of 3 marks each.
6. Section D contains 1 question of 5 marks.
7. Section E contains 2 Case Study Based questions of 4 marks each.

SECTION A - Multiple Choice Questions (1 mark each)

Q1. Five apples are distributed equally among 5 children. Each child gets:

(a) $^{1}/_{5}$ apple
(b) 1 apple
(c) 5 apples
(d) $^{5}/_{5}$ apple

Q2. Which fraction represents the shaded part if 5 out of 8 parts are shaded?

(a) $^{3}/_{8}$
(b) $^{5}/_{8}$
(c) $^{8}/_{5}$
(d) $^{5}/_{3}$

Q3. Which of the following represents an improper fraction?

(a) $^{2}/_{7}$
(b) $^{11}/_{9}$
(c) $^{4}/_{5}$
(d) $^{6}/_{13}$

Q4. The fraction $^{10}/_{10}$ equals:

(a) 0
(b) 1
(c) 10
(d) $^{1}/_{10}$

Q5. In the Bakshali manuscript (300 CE), which symbol was used to write fractions?

(a) Colon (:)

(b) Dash (—)

(c) Fraction bar (/)

(d) Plus (+)

Q6. If $^{a}/_{b}$ and $^{c}/_{d}$ are equivalent fractions, then:

(a) a × d = b × c

(b) a + d = b + c

(c) a × b = c × d

(d) a - d = b - c

Q7. The mixed fraction $4\,^{2}/_{3}$ as an improper fraction is:

(a) $^{10}/_{3}$

(b) $^{12}/_{3}$

(c) $^{14}/_{3}$

(d) $^{8}/_{3}$

Q8. $^{1}/_{2} + {}^{1}/_{4} = ?$

(a) $^{2}/_{6}$

(b) $^{3}/_{4}$

(c) $^{1}/_{6}$

(d) $^{2}/_{8}$

Q9. $^{11}/_{12} - {}^{5}/_{12} = ?$

(a) $^{6}/_{12}$

(b) $^{6}/_{24}$

(c) $^{16}/_{12}$

(d) $^{1}/_{6}$

Q10. Which fraction is in its simplest form?

(a) $^{6}/_{9}$

(b) $^{10}/_{15}$

(c) $^{7}/_{11}$

(d) $^{14}/_{21}$

SECTION B - Short Answer Questions (2 marks each)

Q11. A chocolate bar has 12 pieces. Ravi ate 5 pieces. What fraction of the chocolate bar did he eat? What fraction is left?

Q12. Show that $^{6}/_{8}$ and $^{9}/_{12}$ are equivalent fractions.

Q13. Which is greater: $^{4}/_{7}$ or $^{5}/_{9}$? Show your work.

Q14. Convert $^{23}/_{6}$ into a mixed fraction.

SECTION C - Short Answer Questions (3 marks each)

Q15. Subtract: $^{7}/_{8} - {}^{1}/_{3}$

Q16. Latika walks $^{3}/_{5}$ km from her home to school daily. Her friend Ruchi walks $^{7}/_{10}$ km to reach the same school. Who walks more and by how much?

Q17. Add the following fractions using the common denominator method: $^{1}/_{2} + {}^{2}/_{3} + {}^{3}/_{4}$

SECTION D - Long Answer Question (5 marks)

Q18. A baker made 24 cupcakes. He decorated $^{1}/_{3}$ of them with chocolate frosting, $^{1}/_{4}$ of them with vanilla frosting, and $^{1}/_{6}$ of them with strawberry frosting. The remaining cupcakes were left plain.

(a) What fraction of the cupcakes had chocolate frosting?

(b) What is the total fraction of cupcakes that were decorated?

(c) What fraction of cupcakes were left plain?

(d) How many cupcakes had each type of frosting?

(e) How many cupcakes were left plain?

SECTION E - Case Study Based Questions (4 marks each)

Q19. Case Study 1: Ancient Indian Mathematics

In ancient India, mathematicians used the word 'bhinna' for fractions, which means 'broken' or 'divided'. Brahmagupta (628 CE) was the first to formally describe operations with fractions. He explained that to add or subtract fractions, we must first convert them to the same fractional unit (same denominator).

(a) Why is it necessary to have the same denominator before adding fractions? (1 mark)

(b) Add $^{1}/_{4}$ and $^{3}/_{8}$ using Brahmagupta's method. (1 mark)

(c) If two fractions have denominators 6 and 9, what is the least common denominator? (1 mark)

(d) Express $^{5}/_{6}$ and $^{7}/_{9}$ with the common denominator you found. (1 mark)

Q20. Case Study 2: Number Line and Fractions

A teacher asks students to mark fractions on a number line from 0 to 2. She explains that between any two fractions, infinitely many fractions exist. For example, between 0 and 1, we can mark $^{1}/_{2}$, $^{1}/_{3}$, $^{1}/_{4}$, and so on.

(a) On a number line, where would $^{3}/_{2}$ be located? (1 mark)

(b) Convert $^{3}/_{2}$ to a mixed number. (1 mark)

(c) Name one fraction that lies between $^{1}/_{3}$ and $^{1}/_{2}$. (1 mark)

(d) Which is farther from 0: $^{5}/_{4}$ or $^{7}/_{6}$? Show your work. (1 mark)

DETAILED ANSWER KEY - PAPER 04

SECTION A - Answers to MCQs

Ans 1. (b) 1 apple

When 5 apples are distributed equally among 5 children, each child gets 5÷5 = 1 apple. (Note: $^{5}/_{5} = 1$)

Ans 2. (b) $^{5}/_{8}$

If 5 parts out of 8 total parts are shaded, the fraction is $^{5}/_{8}$.

Ans 3. (b) $^{11}/_{9}$

An improper fraction has a numerator greater than or equal to the denominator. Here, 11 > 9, so $^{11}/_{9}$ is improper.

Ans 4. (b) 1

When numerator and denominator are equal, the fraction equals 1. $^{10}/_{10} = 1$

Ans 5. (c) Fraction bar (/)

The Bakshali manuscript from ancient India (300 CE) contains the earliest known use of the fraction bar to write fractions.

Ans 6. (a) a × d = b × c

Two fractions are equivalent if their cross products are equal. If $^{a}/_{b} = {}^{c}/_{d}$, then a × d = b × c.

Ans 7. (c) $^{14}/_{3}$

$4^{2}/_{3} = (4\times3 + 2)/3 = (12+2)/3 = {}^{14}/_{3}$

Ans 8. (b) $^{3}/_{4}$

$^{1}/_{2} + {}^{1}/_{4} = {}^{2}/_{4} + {}^{1}/_{4} = {}^{3}/_{4}$

Ans 9. (a) $^{6}/_{12}$

$^{11}/_{12} - {}^{5}/_{12} = {}^{11-5}/_{12} = {}^{6}/_{12}$ (or $^{1}/_{2}$ in simplest form)

Ans 10. (c) $^{7}/_{11}$

$^{7}/_{11}$ is in simplest form because 7 and 11 have no common factor other than 1 (both are prime or coprime).

SECTION B - Answers to Short Answer Questions

Ans 11.

Total pieces = 12

Pieces eaten by Ravi = 5

Fraction eaten = $^{5}/_{12}$

Pieces left = 12 - 5 = 7

Fraction left = $^{7}/_{12}$

Answer: Ravi ate $^{5}/_{12}$ of the chocolate bar and $^{7}/_{12}$ is left.

Ans 12.

To show $^{6}/_{8}$ and $^{9}/_{12}$ are equivalent:

Method 1: Simplify both fractions

$^{6}/_{8} = ^{6\div2}/_{8\div2} = ^{3}/_{4}$

$^{9}/_{12} = ^{9\div3}/_{12\div3} = ^{3}/_{4}$

Since both simplify to $^{3}/_{4}$, they are equivalent.

Method 2: Cross multiplication

6 × 12 = 72 and 8 × 9 = 72

Since the cross products are equal, the fractions are equivalent.

Ans 13.

To compare $^{4}/_{7}$ and $^{5}/_{9}$:

LCM of 7 and 9 = 63

$^{4}/_{7} = ^{4\times9}/_{7\times9} = ^{36}/_{63}$

$^{5}/_{9} = ^{5\times7}/_{9\times7} = ^{35}/_{63}$

Since 36 > 35, we have $^{36}/_{63} > ^{35}/_{63}$

Therefore, $^{4}/_{7} > ^{5}/_{9}$

Answer: $^{4}/_{7}$ is greater than $^{5}/_{9}$

Ans 14.

$^{23}/_{6}$

Step 1: Divide 23 by 6

23 ÷ 6 = 3 with remainder 5

Step 2: Write as mixed fraction

$^{23}/_{6} = 3^{5}/_{6}$

Answer: $3^{5}/_{6}$

SECTION C - Answers to Short Answer Questions

Ans 15.

$^{7}/_{8} - ^{1}/_{3}$

Step 1: Find LCM of 8 and 3

LCM = 24

Step 2: Convert to same denominator

$^{7}/_{8} = {}^{7\times3}/_{8\times3} = {}^{21}/_{24}$

$^{1}/_{3} = {}^{1\times8}/_{3\times8} = {}^{8}/_{24}$

Step 3: Subtract

$^{21}/_{24} - {}^{8}/_{24} = {}^{13}/_{24}$

The fraction $^{13}/_{24}$ is already in simplest form.

Answer: $^{13}/_{24}$

Ans 16.

Latika walks = $^{3}/_{5}$ km

Ruchi walks = $^{7}/_{10}$ km

Step 1: Convert to same denominator

LCM of 5 and 10 = 10

Latika: $^{3}/_{5} = {}^{6}/_{10}$ km

Ruchi: $^{7}/_{10} = {}^{7}/_{10}$ km

Step 2: Compare

Since $^{7}/_{10} > {}^{6}/_{10}$, Ruchi walks more

Step 3: Find difference

$^{7}/_{10} - {}^{6}/_{10} = {}^{1}/_{10}$ km

Answer: Ruchi walks more by $^{1}/_{10}$ km

Ans 17.

$^{1}/_{2} + {}^{2}/_{3} + {}^{3}/_{4}$

Step 1: Find LCM of 2, 3, and 4

LCM = 12

Step 2: Convert all fractions to denominator 12

$^{1}/_{2} = {}^{1\times6}/_{2\times6} = {}^{6}/_{12}$

$^{2}/_{3} = {}^{2\times4}/_{3\times4} = {}^{8}/_{12}$

$^{3}/_{4} = {}^{3\times3}/_{4\times3} = {}^{9}/_{12}$

Step 3: Add

$^{6}/_{12} + {}^{8}/_{12} + {}^{9}/_{12} = {}^{23}/_{12}$

Step 4: Convert to mixed fraction

$^{23}/_{12} = 1^{11}/_{12}$

Answer: $^{23}/_{12}$ or $1^{11}/_{12}$

SECTION D - Answer to Long Answer Question

Ans 18.

Total cupcakes = 24

(a) Fraction with chocolate frosting:

Chocolate = $^1/_3$ of total

Answer: $^1/_3$

(b) Total fraction decorated:

Chocolate = $^1/_3$

Vanilla = $^1/_4$

Strawberry = $^1/_6$

Total = $^1/_3 + ^1/_4 + ^1/_6$

LCM of 3, 4, and 6 = 12

= $^4/_{12} + ^3/_{12} + ^2/_{12} = ^9/_{12} = ^3/_4$

Answer: $^3/_4$

(c) Fraction left plain:

Plain = $1 - ^3/_4 = ^4/_4 - ^3/_4 = ^1/_4$

Answer: $^1/_4$

(d) Number of cupcakes with each frosting:

Chocolate: $^1/_3 \times 24 = 8$ cupcakes

Vanilla: $^1/_4 \times 24 = 6$ cupcakes

Strawberry: $^1/_6 \times 24 = 4$ cupcakes

(e) Number of plain cupcakes:

Plain = $^1/_4 \times 24 = 6$ cupcakes

Or: 24 - (8 + 6 + 4) = 24 - 18 = 6 cupcakes

Answer: 6 cupcakes

SECTION E - Answers to Case Study Based Questions

Ans 19. Case Study 1: Ancient Indian Mathematics

(a) Why same denominator is necessary:

Fractions must have the same denominator before adding because we can only add quantities that are measured in the same units. Just as we cannot add meters to kilograms, we cannot directly add halves to quarters. The denominator represents the fractional unit, and we must convert all fractions to the same fractional unit before adding them.

(b) Add 1/4 and 3/8:

$^{1}/_{4} + {}^{3}/_{8}$

Step 1: Find common denominator (LCM of 4 and 8 = 8)

Step 2: Convert $^{1}/_{4} = {}^{2}/_{8}$

Step 3: Add $^{2}/_{8} + {}^{3}/_{8} = {}^{5}/_{8}$

Answer: $^{5}/_{8}$

(c) Least common denominator of 6 and 9:

Multiples of 6: 6, 12, 18, 24, ...

Multiples of 9: 9, 18, 27, ...

LCM = 18

Answer: 18

(d) Express with common denominator 18:

$^{5}/_{6} = {}^{5\times3}/_{6\times3} = {}^{15}/_{18}$

$^{7}/_{9} = {}^{7\times2}/_{9\times2} = {}^{14}/_{18}$

Ans 20. Case Study 2: Number Line and Fractions

(a) Location of 3/2 on number line:

$^{3}/_{2} = 1{}^{1}/_{2} = 1.5$

It would be located between 1 and 2, exactly at the midpoint.

(b) 3/2 as mixed number:

$^{3}/_{2} = 1{}^{1}/_{2}$

(c) Fraction between 1/3 and 1/2:

Converting to same denominator:

$^{1}/_{3} = {}^{2}/_{6}$ and $^{1}/_{2} = {}^{3}/_{6}$

One fraction between them: $^{5}/_{12}$

(Other valid answers: $^{7}/_{18}$, $^{2}/_{5}$, or any fraction that satisfies $^{1}/_{3} <$ fraction $< {}^{1}/_{2}$)

(d) Which is farther from 0:

Compare $^{5}/_{4}$ and $^{7}/_{6}$

LCM of 4 and 6 = 12

$^{5}/_{4} = {}^{15}/_{12}$

$^{7}/_{6} = {}^{14}/_{12}$

Since $^{15}/_{12} > {}^{14}/_{12}$, we have $^{5}/_{4} > {}^{7}/_{6}$

Answer: $^{5}/_{4}$ is farther from 0